

# INTERNATIONAL SEARCH REPORT

Internati Application No  
PCT 03/02624

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K49/06 A61K33/26 A61K33/24 C12N5/06 C12M3/00

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61K C12N C12M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal, BIOSIS, EMBASE, MEDLINE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	CARTMELL S.H. ET AL.: "Development of magnetic particle techniques for long-term culture of bone cells with intermittent mechanical activation" IEEE TRANSACTIONS ON NANOBIOSCIENCE, vol. 1, no. 2, - June 2002 (2002-06) pages 92-97, XP001152893 cited in the application the whole document ---	2-45, 47-64, 66,67, 70-72, 74-153
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents:

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
- \*E\* earlier document but published on or after the international filing date
- \*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

- \*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- \*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- \*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- \*G\* document member of the same patent family

Date of the actual completion of the international search

15 October 2003

Date of mailing of the international search report

27/11/2003

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CARTMELL S H ET AL: "Preliminary analysis of magnetic particle techniques for activating mechanotransduction in bone cells" IEEE, 6 June 2002 (2002-06-06), pages 87-88, XP010625856	2-45, 47-64, 66,67, 70-72, 74-153
Y	the whole document	2-45, 47-64, 66,67, 70-72, 74-153
X	--- GLOGAUER M ET AL: "MAGNETIC FIELDS APPLIED TO COLLAGEN-COATED FERRIC OXIDE BEADS INDUCE STRETCH-ACTIVATED CA <sup>2+</sup> FLUX IN FIBROBLASTS" AMERICAN JOURNAL OF PHYSIOLOGY, AMERICAN PHYSIOLOGICAL SOCIETY, BETHESDA, MD, US, vol. 269, no. 5, PART 1, November 1995 (1995-11), pages C1093-C1104, XP001085024 ISSN: 0002-9513 abstract page 1094, column 2, paragraph 2 page 1104, last paragraph	2-45, 47-64, 66,67, 70-72, 74-153
O,X	--- DOBSON J. & EL-HAJ: "Theoretical evaluation of the magnetic force bioreactor" INTERNET ARTICLE, 'Online! XP002257583 Retrieved from the Internet: <URL:http://www.maths.nottingham.ac.uk/Cmm/MMSG2001/SGprobsInf.html> 'retrieved on 2001-07-31! abstract --- -/-	2-45, 47-64, 66,67, 70-72, 74-153

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 06248 A (CHILDRENS MEDICAL CENTER ;HARVARD COLLEGE (US)) 2 March 1995 (1995-03-02)	3-5, 10-16, 26-28, 31-45, 47,48, 72, 75-77, 82-88, 99,100, 103-106, 109-120, 122,123, 145,152, 153
Y	abstract  page 5, paragraph 2 page 9, paragraph 3 -page 11 ----	2-45, 47-64, 66,67, 70-72, 74-153
Y	DOBSON J ET AL: "Application of the ferromagnetic transduction model to D.C. and pulsed magnetic fields: effects on epileptogenic tissue and implications for cellular phone safety." BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS. UNITED STATES 23 OCT 1996, vol. 227, no. 3, 23 October 1996 (1996-10-23), pages 718-723, XP002257582 ISSN: 0006-291X abstract page 720, paragraph 4 ----	2-22, 25-28, 38, 74-94, 97-100, 113
Y	MYKHAYLYK O M ET AL: "Signal transduction of erythrocytes after specific binding of ecdysterone and cholesterol immobilized on nanodispersed magnetite" JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS, ELSEVIER SCIENCE PUBLISHERS, AMSTERDAM, NL, vol. 225, no. 1-2, 2001, pages 226-234, XP004234950 ISSN: 0304-8853 abstract page 233, column 1, paragraph 4 -column 2 ----- -/--	71,72, 107-109, 149-153

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	SCHÜTT W ET AL: "Applications of magnetic targeting in diagnosis and therapy--possibilities and limitations: a mini-review." HYBRIDOMA. UNITED STATES FEB 1997, vol. 16, no. 1, February 1997 (1997-02), pages 109-117, XP009018792 ISSN: 0272-457X the whole document	71,72, 107-109, 149-153
X,P	WO 02 051985 A (DOBSON JON PAUL ;UNIV KEELE (GB); EL-HAJ ALICIA JENNIFER HAFEEZA ( ) 4 July 2002 (2002-07-04)  abstract page 3 -page 5 page 8, line 2 page 10 claims 1-19	2-45, 47-64, 66,67, 70-72, 74-153
A	WO 01 88540 A (UNIV FLORIDA) 22 November 2001 (2001-11-22) cited in the application  the whole document	2-45, 47-64, 66,67, 70-72, 74-153

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## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:  
  
Although claims 1-72, 153 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☒ Claims Nos.: 1-25, 35-97, 103-105, 107-153 (in part)  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:  
see FURTHER INFORMATION sheet PCT/ISA/210
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

### Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box I.2

Claims Nos.: 1-25,35-97,103-105,107-153 (in part)

Present claims 1,46,65,68-69,73, relate to an extremely large number of possible methods (of magnetically manipulating a cell and of treatment of patient suffering from a disorder in which an ion channel plays a role). In fact, the claims contain so many possible permutations that a lack of clarity within the meaning of Article 6 PCT arises to such an extent as to render a meaningful search of the claims impossible. Consequently, the search has been carried out for those parts of the application which do appear to be clear, namely to those parts specifically referring to the manipulation of ion channels and to specific diseases.

Present claims 1-25,31-33, 35-97,103-105,107-153 relate to an extremely large number of possible compounds (magnetisable particle). Support within the meaning of Article 6 PCT and disclosure within the meaning of Article 5 PCT is to be found, however, for only a very small proportion of the compounds claimed. In the present case, the claims so lack support, and the application so lacks disclosure, that a meaningful search over the whole of the claimed scope is impossible. Consequently, the search has been carried out for those parts of the claims which appear to be supported and disclosed, namely those parts specifically relating to the compounds mentioned in the description at page 7 and in claims 26-30.

The applicant's attention is drawn to the fact that claims, or parts of claims, relating to inventions in respect of which no international search report has been established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 9506248	A	02-03-1995	US	5486457 A		23-01-1996
			WO	9506248 A1		02-03-1995
WO 02051985	A	04-07-2002	CA	2432574 A1		04-07-2002
			EP	1343872 A2		17-09-2003
			WO	02051985 A2		04-07-2002
WO 0188540	A	22-11-2001	US	6548264 B1		15-04-2003
			AU	6184101 A		26-11-2001
			CA	2410023 A1		22-11-2001
			EP	1287359 A1		05-03-2003
			WO	0188540 A1		22-11-2001
			US	2002098529 A1		25-07-2002